CLAIMS

1. A radio communication system having a random access channel for the transmission of data from a secondary station to a primary station, the secondary station having means for requesting access to a random access channel resource by transmitting a signal encoded with a first signature corresponding to the resource, the primary station having means for transmitting a response to the request, the secondary station having means for subsequently transmitting a contention resolution signal encoded with a second signature, and the primary station having means for transmitting a further response to the contention resolution signal, for selecting a random access channel to which the secondary station will be granted access, and for transmitting a channel allocation signal identifying this channel at the same time as at least one of the responses.

2. A system as claimed in claim 1, characterised in that the random access channel is adapted for transmission of data in packets.

3. A primary station for use in a radio communication system having a random access channel for the transmission of data from a secondary station to the primary station, wherein means are provided for transmitting a response to a request from the secondary station for access to a random access channel resource, the request comprising transmission of a signal encoded with a first signature, for transmitting a further response to a subsequent contention resolution signal encoded with a second signature transmitted by the secondary station, for selecting a random access channel to which the secondary station will be granted access, and for transmitting a channel allocation signal identifying this channel at the same time as at least one of the responses.

4. A primary station as claimed in claim 3, characterised in that means are provided for transmitting a further response to a further contention resolution signal transmitted by the secondary station.

5. A primary station as claimed in claim 3 ~~or 4~~, characterised in that means are provided for transmitting the channel allocation signal at the same time as each of the responses.

6. A primary station as claimed in claim 3 ~~or 4~~, characterised in that means are provided for subdividing the channel allocation signal into a plurality of portions, and for transmitting each of the portions at the same time as a respective one of the responses.

7. A primary station as claimed in ~~any one of claims 3 to 6~~ claim 3, characterised in that means are provided for including the channel allocation signal as part of the or each response.

8. A primary station as claimed in ~~any one of claims 3 to 7~~ claim 7, characterised in that means are provided for transmitting a random access channel status message indicating the highest data rate available on the random access channel.

9. A secondary station for use in a radio communication system having a random access channel for the transmission of data to a primary station, wherein means are provided for requesting access to a random access channel resource by transmitting a signal encoded with a first signature corresponding to the resource, for receiving a response from the primary station and subsequently transmitting a contention resolution signal encoded with a second signature, for receiving a further response from the primary station, and for determining which channel has been allocated from a channel allocation signal transmitted by the primary station at the same time as at least one of the responses.

10. A secondary station as claimed in claim 9, characterised in that means are provided for receiving from the primary station a random access channel status message indicating the availability of random access channel resources and for using the status message as a check on the channel allocation signal before initial transmission of data.

11. A method of operating a radio communication system having a random access channel for the transmission of data from a secondary station to a primary station, the method comprising the secondary station requesting access to a random access channel resource by transmitting a signal encoded with a first signature corresponding to the resource, the primary station transmitting a response to the request, the secondary station subsequently transmitting a contention resolution signal encoded with a second signature, and the primary station transmitting a further response to the contention resolution signal, selecting a random access channel to which the secondary station will be granted access, and transmitting a channel allocation signal identifying this channel at the same time as at least one of the responses.

12. A method as claimed in claim 11, characterised by the secondary station transmitting a further contention resolution signal and the primary station transmitting a further response.

13. A method as claimed in claim 11 ~~or 12,~~ characterised by the primary station transmitting the channel allocation signal at the same time as each of the responses.

14. A method as claimed in claim 11 ~~or 12,~~ characterised by the primary station subdividing the channel allocation signalling into a plurality of portions, and transmitting each of the portions at the same time as a respective one of the responses.

15. A method as claimed in ~~any one of claims 11 to 14~~ Claim 11, characterised by the primary station including the allocation signalling as part of the or each response.

16. A method as claimed in ~~any one of claims 11 to 15~~ Claim 11, characterised by the primary station transmitting a random access channel status message indicating the highest data rate available on the random access channel.